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BOTANY.—Notes on *Fraxinus* (ash) in the United States. ELBERT L. LITTLE, JR., U. S. Forest Service.

Under a conservative treatment the genus *Fraxinus* L. (family Oleaceae), common name ash, contains 16 native species with 2 additional important varieties in the United States. This article presents taxonomic and nomenclatural notes on 11 of these, including publication of a new species from the Mexican border of Arizona and Sonora, reduction of *F. lowellii* to a variety of *F. anomala*, inclusion of *F. dipetala* as a tree species, a new combination for a Mexican variation of *F. greggii*, acceptance of the older name *F. latifolia* for *F. oregona*, addition of *F. papillosa* as a native tree species and State record for Arizona, restoration of *F. profunda* in place of *F. tomentosa*, and reduction of several varieties to synonymy.

In the last formal descriptive and illustrated treatment of *Fraxinus* in the United States, Sargent (Man. Trees North Amer. ed. 2, 833–853, illus. 1922; ed. 2, corr., 833–853, illus. 1926) accepted 19 native species and 10 varieties, of which only 2 varieties were illustrated. Two of the species merely were mentioned, *F. dipetala* Hook. & Arnott as a shrub and *F. papillosa* Lingelsh. of Mexico as known from a single plant, possibly a shrub, along the southwestern border of New Mexico. Sudworth (Check List Forest Trees U. S. 224–228. 1927) followed Sargent, except that the 2 shrubby species and 1 variety (*F. cuspidata* var. *macro-petala*) were omitted.

Later authors have united several names. Fernald (Rhodora 40: 450–452, t. 528. 1938) took up *F. tomentosa* Michx. f. for *F. profunda* (Bush) Bush (*F. michauxii* Britton), a change rejected here. Kearney and Peebles (Fl. Pl. Ferns Ariz. 672. 1942) united *F. standleyi* Rehd. with *F. velutina* Torr., and Benson and Darrow (Man. Southwest. Desert Trees Shrubs 260, 377. 1945) re-

duced the varieties of the latter to synonymy. Fernald (Rhodora 50: 186–190. 1948) placed *F. pauciflora* Nutt. under *F. caroliniana* Mill., while distinguishing varieties and forms of the latter.

Jonathan W. Wright, of the United States Forest Service, has published the following two articles on his experimental studies in *Fraxinus*: "Genotypic Variation in White Ash," Journ. Forestry 42: 489–495. 1944; "Ecotypic Differentiation in Red Ash," Journ. Forestry 42: 591–597. 1944. In the former he united *F. biltmoreana* Beadle with *F. americana* L., and in the latter reduced *F. pennsylvanica* var. *lanceolata* to synonymy. I am indebted to him for further suggestions.

In checking the nomenclature of *Fraxinus* I have examined the specimens at the National Herbarium (US), of the United States National Museum, which contains many types, isotypes and other important specimens in this genus. The synonymy given here is that directly related to the names discussed. Lists of additional and especially old synonyms were compiled by Sargent (Silva North Amer., 14 vols., illus. 1891–1902) and Rehder (Bibliog. Cult. Trees Shrubs, 825 pp. 1949).

Of the 16 native species of *Fraxinus* accepted here, *Fraxinus nigra* Marsh. and *F. quadrangulata* Michx. are clearly distinct and need not be mentioned further. *F. texensis* (A. Gray) Sarg. of Texas and Oklahoma is a southwestern xeric ash closely related to *F. americana* but with fewer and smaller leaflets and originally named as a variety of the latter. Similarly, *F. berlandieriana* A. DC. is a xeric Texan and Mexican relative of *F. pennsylvanica* with reduced leaflets and has been regarded also as a variety of green ash. *F. cuspidata* Torr. consists of 2 varie-